MINUTES OF THE KEPLER USERS PANEL

28-29 Nov 2012

Building N244, NASA Ames Research Center, Moffett Field CA

Prepared by: Alex Brown, Chair

This meeting's presentations are available at http://keplerscience.arc.nasa.gov/KUP.shtml

Members Present: Suzanne Aigrain (by telecon), Patricia Boyd, Alex Brown, Bill Chaplin (by telecon), Steve Howell [Project Scientist], Doug Hudgins [Program Scientist], Roger Hunter [Project Manager], Steve Kawaler, David Silva (by telecon).

Members Absent: John Johnson

Others: Faith Abney (by telecon), Rachel Akeson (by telecon), Natalie Bathala (by telecon), Bill Borucki, David Ciardi, Nick Gautier (by telecon), Mike Haas, Ingolf Heinrichsen (by telecon), Jon Jenkins, Martin Still, Marcie Smith, Charlie Sobeck.

Welcome & Introductions – Charlie Sobeck, Steve Howell

Overview of the Mission – Charlie Sobeck

Charlie described the management structure of the Kepler Extended Mission and the different organizations involved in the collection, handling, and processing of Kepler data.

KUP Charter – Steve Howell, Doug Hudgins

Steve Howell described the role and duties of the Extended Mission KUP and discussed the areas in which the KUP can provide input to ensure the success of the mission's goals.

Science Highlights – Steve Howell

Steve presented a range of major Kepler scientific results relating to both exoplanets and stellar and AGN astrophysics.

Spacecraft health and mission lifetime – Marcie Smith

The spacecraft is generally operating well. However, a reaction wheel failed in July 2012 and there is now no redundancy with the three remaining wheels, although the spacecraft is operating well in this mode. Problems with the star trackers have resulted in spacecraft safings. The X band down-link (which provides monitoring of the spacecraft status) telemetry rate due to increasing spacecraft distance is a steadily increasing concern. The propellant supply is good until 2019 and is not yet a primary mission limiting factor. The current operations are maintaining the required data completeness target.

Science Office issues & future plans – Martin Still

The Science Office tasks and deliverables were described. Several data products that could potentially be archived were discussed but the KUP reaction to many of the suggested items was that these were data processing steps that the scientific user would often prefer to perform themselves.

Science Operations Center future plans – Jon Jenkins

Jon described the status of the SOC software and new capabilities that will become available in SOC 9.0+. A plan to make the SOC pipeline software publicly available was discussed with options to provide either a read-only version or a more fully supported effort.

MAST Archive – Faith Abney

Faith discussed the Kepler Archive at STScI and how it fitted in with the rest of MAST. She described the available retrieval methods and the current level of Kepler data retrieval. Most data products are proving useful to the scientific community based on survey results.

NexSCi/ Exoplanet Archive – Rachel Akeson

NExSci is being funded by NASA to provide an Exoplanet Archive. Kepler data and planet candidates will form part of this archive; in addition to the existing archive arrangement at MAST. The intention is that the NExSci archive will better foster community activities regarding exoplanet follow-up and ways to encourage community contributions were discussed.

Extended mission follow-up program (XMFOP) – David Ciardi

The follow-up program was described by the XMFOP coordinator. This program is designed to provide spectroscopic and imaging data that are vital to achieving the "small exoplanet" goals of the extended Mission.

Guest Observer program – Martin Still

Martin discussed the GO program and the functioning of the GO office. The staffing of the GO office continues to decline (now at 1.5 FTE) but there are still probably enough resources within the GO and SO offices to provide the necessary GO support.

The Cycle 4 target and pixel over-subscription was significant. The GO proposal process was discussed. The current January deadline is probably reasonable but it leaves little time between encouraging proposals at the Winter AAS meeting and the proposal deadline. Cycle 5 GO proposals are due on 2013 January 18. The detailed rules for Cycle 6 need to be established by October 2013.

The Kepler refereed publication rate continues to increase.

Several new PyKE tools were highlighted.

Extended Mission Exoplanet Working Groups – Natalie Batalha

Natalie discussed the working group structure designed to enable the prime Extended Mission goal of determining Eta Earth. The working group structure already involves significant numbers of people. A working group related to the stellar properties of exoplanet hosts has been formed. There was extensive discussion regarding how additional community involvement within these working groups would be encouraged and managed.

Participating Scientist Program Doug Hudgins

An opportunity for new PSP particpation in the Kepler Extended Mission will be provided by a Cycle 3 PSP opportunity with proposals due in March 2013 and annual $1M funding for three year research efforts.

Extended Mission Goals – Steve Howell

The extended mission efforts will focus on a) completion of the exoplanet survey, b) a limited follow-up program (XMFOP) to determine planet-host properties, c) estimation of pipeline completeness for eta-earth determination, d) supporting community observations and archival data use, e) building and maintaining the mission Legacy archive, and f) a robust Education and Public Outreach(EPO) program.

These efforts will be supported by funding through the Kepler GO and PSP programs and the NASA ADAP and Origins programs and Keck observing allocations.

Engaging the Astrophysics community – Martin Still

Martin described efforts to involve a wider section of the astronomical community in Kepler science. The roles of different modes of interaction at conferences and meetings were discussed. Plans for a Second Kepler Science Conference are underway and the intention is to hold this conference in early November 2013 at NASA Ames. The KUP suggested that an East Coast venue might attract a wider audience but this was not logistically feasible.

Target Down-Selection – Martin Still

The need for target down-selection during the Extended Mission was discussed. Even if the total number of observed pixels is not reduced, thought needs to be given to how different types of targets will be allocated/reallocated during the Extended Mission, particularly in terms of the size of the GO allocation.

DISCUSSION AND RECOMMENDATIONS BY THE KUP

The KUP engaged in discussions both with the Mission personnel and in executive session.

ACTIONS:

- Minutes from 2012 May meeting: Approved.

- The KUP agreed to assist the Guest Observer Office by providing external evaluation for DDT requests.

- The possibility of introducing Target-of-Opportunity observation capability has been investigated. The minimum response time would likely be ∼one week. It is unclear what range of currently unstudied phenomena could be investigated with such a capability and direct querying of the supernova community produced no strong support.

- Feedback will be provided to the KEC regarding how the roles of the Working Groups can be highlighted on the Kepler Mission website.

RECOMMENDATIONS:

- A two-phase guest observer proposal system would likely encourage greater participation in the GO program. The KUP reiterated its recommendation that the possibility of introducing such a system for Cycle 6 be investigated in depth. Doug Hudgins and Padi Boyd will discuss how this might be achieved.

- Target down-selection appears to be unnecessary for the first two years of the Extended Mission. The actual data downlink time is only a small part of the overall monthly data gaps and even a vast (50%) reduction in the number of recorded pixels does not produce a worthwhile increase in observing efficiency. However, consideration needs to be given to the correct number of GO targets before Cycle 6 proposals are due.

- Good progress is being made in porting the pipeline software to the supercomputer which should ensure sufficent capability to process the full mission dataset. The manpower costs involoved in making the SOC code publically available need to be carefully quantified before any action is taken, particularly if more than a simple read-only release is being contemplated. It seems unlikely that the current documentation would be sufficient to allow wide implementation of the software by outside users.

- Although the information available to KUP members was improved at this meeting, there is still scope for KUP meeting preparation to be improved. It would be very useful to have the presentations available a few days to a week ahead, so that the material can be studied by the panel beforehand, and also to have advance notice of items that require recommendations from the KUP because this would prompt the necessary discussions.

Future Meetings:

The next formal KUP meeting will most likely be held in late Spring or early Summer 2013, but the KUP will hold meetings via telecon before that time.